

What is claimed is:

1. An engine oil degradation-determining system that determines a degradation level of engine oil for lubricating an internal combustion engine,

the engine oil degradation-determining system comprising:

operating condition-detecting means for detecting an operating condition of the engine;

degradation level parameter-calculating means for calculating a degradation level parameter indicative of a degradation level of the engine oil, based on the detected operating condition;

degradation-determining means for determining the degradation level of the engine oil, based on the calculated degradation level parameter;

oil level-detecting means for detecting an oil level of the engine oil; and

degradation level parameter-correcting means for correcting the degradation level parameter in a direction of indicating a lower degradation level, when the detected oil level was equal to or lower than a predetermined lower limit value before stoppage of the engine, and is equal to or higher than a predetermined upper limit value higher than the predetermined lower limit value after start operation of the engine following the stoppage.

2. An engine oil degradation-determining system as claimed in claim 1, wherein said oil level-detecting means comprises:

an upper limit switch for detecting whether or not the oil level is equal to or higher than the predetermined upper limit value, and

a lower limit switch for detecting whether or not the oil level is equal to or lower than the predetermined lower limit value.

3. An engine oil degradation-determining system as claimed in claim 2, wherein said upper limit switch outputs an ON signal when the oil level is equal to or higher than the predetermined upper limit value, outputs an OFF signal when the oil level is equal to or lower than a second upper limit value lower than the predetermined upper limit value, and maintains the ON or OFF signal having been output before the oil level has entered a first range between the predetermined upper limit value and the second upper limit value when the oil level is in the first range, and

wherein said lower limit switch outputs an ON signal when the oil level is equal to or lower than the predetermined lower limit value, outputs an OFF signal when the oil level is equal to or higher than a second lower limit value higher than the predetermined lower limit value, and maintains the ON or OFF signal having been output before the oil level has entered a second range between the predetermined lower limit value and the second lower limit value when the oil level is in the second range.

4. An engine oil degradation-determining system as claimed in claim 1, wherein the degradation level parameter is a cumulative number of revolutions of the engine counted starting from a time of an oil change.

5. An engine oil degradation-determining system as claimed in claim 4, wherein said degradation level parameter-calculating means includes means for carrying out a limiting process on the cumulative number of revolutions based on a cumulative travel distance of a

vehicle on which the engine is installed, measured starting from the oil change.

6. An engine oil degradation-determining method of determining a degradation level of engine oil for lubricating an internal combustion engine,

the engine oil degradation-determining method comprising the steps of:

detecting an operating condition of the engine;

calculating a degradation level parameter indicative of a degradation level of the engine oil, based on the detected operating condition;

determining the degradation level of the engine oil, based on the calculated degradation level parameter;

detecting an oil level of the engine oil; and

correcting the degradation level parameter in a direction of indicating a lower degradation level, when the detected oil level was equal to or lower than a predetermined lower limit value before stoppage of the engine, and is equal to or higher than a predetermined upper limit value higher than the predetermined lower limit value after start operation of the engine following the stoppage.

7. An engine oil degradation-determining method as claimed in claim 6, wherein the step of detecting an oil level includes detecting the oil level using an upper limit switch for detecting whether or not the oil level is equal to or higher than the predetermined upper limit value, and a lower limit switch for detecting whether or not the oil level is equal to or lower than the predetermined lower limit value.

8. An engine oil degradation-determining method as claimed in claim 7, wherein said upper limit switch

outputs an ON signal when the oil level is equal to or higher than the predetermined upper limit value, outputs an OFF signal when the oil level is equal to or lower than a second upper limit value lower than the predetermined upper limit value, and maintains the ON or OFF signal having been output before the oil level has entered a first range between the predetermined upper limit value and the second upper limit value when the oil level is in the first range, and

wherein said lower limit switch outputs an ON signal when the oil level is equal to or lower than the predetermined lower limit value, outputs an OFF signal when the oil level is equal to or higher than a second lower limit value higher than the predetermined lower limit value, and maintains the ON or OFF signal having been output before the oil level has entered a second range between the predetermined lower limit value and the second lower limit value when the oil level is in the second range.

9. An engine oil degradation-determining method as claimed in claim 6, wherein the degradation level parameter is a cumulative number of revolutions of the engine counted starting from a time of an oil change.

10. An engine oil degradation-determining method as claimed in claim 9, wherein the step of calculating a degradation level parameter includes carrying out a limiting process on the cumulative number of revolutions based on a cumulative travel distance of a vehicle on which the engine is installed, measured starting from the oil change.

11. An engine control unit including a control program for causing a computer to determine a degradation level of engine oil for lubricating an

internal combustion engine,

wherein the program causes the computer to detect an operating condition of the engine, calculate a degradation level parameter indicative of a degradation level of the engine oil, based on the detected operating condition, determine the degradation level of the engine oil, based on the calculated degradation level parameter, detect an oil level of the engine oil, and correct the degradation level parameter in a direction of indicating a lower degradation level, when the detected oil level was equal to or lower than a predetermined lower limit value before stoppage of the engine, and is equal to or higher than a predetermined upper limit value higher than the predetermined lower limit value after start operation of the engine following the stoppage.

12. An engine control unit as claimed in claim 11, wherein when the control program causes the computer to detect an oil level, the control program causes the computer to detect the oil level using an output from an upper limit switch for detecting whether or not the oil level is equal to or higher than the predetermined upper limit value, and an output from a lower limit switch for detecting whether or not the oil level is equal to or lower than the predetermined lower limit value.

13. An engine control unit as claimed in claim 12, wherein said upper limit switch outputs an ON signal when the oil level is equal to or higher than the predetermined upper limit value, outputs an OFF signal when the oil level is equal to or lower than a second upper limit value lower than the predetermined upper limit value, and maintains the ON or OFF signal

having been output before the oil level has entered a first range between the predetermined upper limit value and the second upper limit value when the oil level is in the first range, and

wherein said lower limit switch outputs an ON signal when the oil level is equal to or lower than the predetermined lower limit value, outputs an OFF signal when the oil level is equal to or higher than a second lower limit value higher than the predetermined lower limit value, and maintains the ON or OFF signal having been output before the oil level has entered a second range between the predetermined lower limit value and the second lower limit value when the oil level is in the second range.

14. An engine control unit as claimed in claim 11, wherein the degradation level parameter is a cumulative number of revolutions of the engine counted starting from a time of an oil change.

15. An engine control unit as claimed in claim 14, wherein when the control program causes the compute to calculate the degradation level parameter, the control program causes the computer to carry out a limiting process on the cumulative number of revolutions based on a cumulative travel distance of a vehicle on which the engine is installed, measured starting from the oil change.